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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/663,568
Filing Date: September 15, 2003
Appellant(s): WU ET AL.

Cameron K. Kerrigan
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 25, 2011 appealing from the Office action mailed May 24, 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

25, 28-32, and 34-37.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,099,562	Ding et al.	08-2000
20020133183	Lentz et al.	09-2002
5,886,026	Hunter et al.	03-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner. Claims 32, 34, 36, and 37 are no longer anticipated by Ding et al. under 102(e).

NEW GROUND(S) OF REJECTION

Appellant's arguments are effective to overcome the previous rejection of claims 32, 34, 36, and 37 as anticipated by Ding et al. under 35 USC 102(e). Because prosecution has been reopened several times already, this new ground of rejection is made which brings the claims previously rejected only under 35 USC 102 under the previously-made rejection of other claims under 35 USC 103. This new ground of rejection is not seen to create issues not already present in the application but merely corrects the oversight of not including all claims in the rejections under 35 USC 103.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 32, 35, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ding *et al.* (hereinafter "Ding") (U.S. Pat. No. 6,099,562) in view of Lentz *et al.* (hereinafter "Lentz") (U.S. Pat. Application No. 2002/0133183).

Ding ('562) teaches a medical device, coating and method for coating an implantable stent wherein a relatively thin layer of biostable elastomeric material in which biologically active material is dispersed as a coating is applied on the surfaces of the stent prosthesis (col. 3, line 60 – col. 4, line 7). The coating is preferably applied as a mixture, solution or suspension of polymeric material and finely divided biologically active species dispersed in an organic vehicle or a solution or partial solution of such species in a solvent or vehicle for the polymer and/or biologically active species (col. 4, lines 8-13). The term "finely divided" refers to any type or size of included material from dissolved molecules through suspensions, colloids and particulate mixtures. The active material is dispersed in a carrier material which may be the polymer, a solvent or both. The coating is preferably applied as a plurality of relatively thin layers sequentially applied in relatively rapid sequence and is preferably applied with the stent in a radially expanded state (col. 4, lines 14-21). Ding teaches that the coating may be applied by dipping or spraying using evaporative solvent materials of relatively high vapor pressure (col. 4, line 66 – col. 5, line 9).

The layered coating is referred to as the undercoat and topcoat. Typically most or all of the biologically active material is contained in the undercoat and a non-thrombogenic or biocompatible non-porous surface found in the topcoat (col. 4, lines 22-30); (col. 6, lines 6-14).

The topcoat can cover either the entire undercoat or only part of the undercoat before or after implantation (col. 6, lines 50-54). In this regard, Fig. 8 demonstrates use of a topcoat containing Fluorosilicone (FSi) *only* (i.e., no drug) as compared with a Fsi topcoat containing heparin (col. 8, lines 54-57). Thus, based upon this reading the topcoat layer is free from therapeutic substance(s). In addition, column 15, lines 25-30 indicates that the layers can be used which have *no drug loadings* at all. For example, a pulsatile heparin release system may be achieved by a coating in which alternate layers containing heparin are sandwiched between unloaded layers of silicone or other materials for a portion of the coating. Thus, various combinations can be obtained with respect to controlling the release of biologically active materials. Suitable active materials disclosed include agents that inhibit hyperplasia and particularly, restenosis (col. 7, lines 30-53).

Hence, Ding teaches a medical device (i.e., stent) and coating method comprising application of a suspension, colloids and particulate mixtures whereby polymer/drug has been dispersed in an organic phase or vehicle/carrier. Ding teaches that such a process enables an effective method of coating an implant, such as a stent whereby a relatively thin layer of or multi-layer coating of biostable elastomeric material in which active material is dispersed can be achieved. The device comprises both an undercoat and topcoat, whereby the topcoat can be free of drug or therapeutic substances. The coating is applied onto the surfaces of the stent such as by spraying and the amount of active substance can be varied using this process.

Ding does not teach a therapeutic substance encased within polymeric particles.

Lentz ('183) teaches implantable medical devices, such as stents, provided with polymeric coatings (i.e., polyfluoro copolymers) and films to deliver pharmaceutically active

material (page 8, ¶ 0084, Abstract), whereby particles of drug are fully encapsulated in the polymer (page 9, ¶ 0088) and wherein different polyfluoro copolymers may be used for different layers in the stent coating. The individual coatings may be prepared from different polyfluoro copolymers (page 8, ¶ 0084). Blends of polyfluoro copolymers may also be used. The use of different polymeric coatings provides a desired balance of coating properties, i.e., elasticity, toughness, etc. and drug delivery characteristics, such as release profile (page 8-9, ¶s 0086-0087). Lentz teaches that in cases where a dispersion is applied to the stent and the smoothness of the coating film surface requires improvement, or to be ensured that all particles of the drug are fully encapsulated in the polymer or in cases where the release rate of the drug is to be slowed, a clear topcoat used to provide sustained release of the drug or another polyfluoro copolymer that further restricts the diffusion of the drug out of the coating may be applied (page 9, ¶ 0088). Lentz teaches that the coatings and films may be cross-linked once applied to the stent. Cross-linking of different layers results in a continuous matrix of coating (i.e., one coating layer). Therefore, even though several layers are applied, the act of cross-linking these layers creates one layer, wherein other polymers are present that are different from the polymer particles encapsulating the therapeutic agent. Lentz also teaches the addition of a hydrophilic or hydrophobic polymer to the coating, however only the polyfluoro polymer encapsulates the drug particles, as evidenced by the statement "that all particles of the drug are fully encapsulated in **the** polymer". See page 9, paragraph [0087-0088].

With respect to claims 36 and 37, which recite product-by-process limitations, the Examiner notes "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a

product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate different polymeric coatings onto an implantable medical device, such as a stent, as taught by Lentz, within the devices of Ding. One would do so with a reasonable expectation of success because Lentz explicitly teaches implantable medical devices (i.e., stents) provided with polymeric coatings (i.e., polyfluoro copolymers) to deliver pharmaceutically active material, whereby particles of drug are fully encapsulated in the polymer, and other polymers, different from the polyfluoro polymer, may be added to the coating composition. By encapsulating a therapeutic particle with a polymer, the polymer in turn becomes a particle. The use of different polymeric coatings provides a desired balance of coating properties, i.e., elasticity, toughness, etc. and drug delivery characteristics, such as release profile. Once these different layers are cross-linked, a continuous coating layer is formed containing polymers different from the polymeric particles encapsulating the therapeutic agent. The expected result would be an improved drug-loaded stent for the delivery of various active agents.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 25 and 32 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a coating layer that is 'not' free from therapeutic substances, does not reasonably provide enablement for "a coating layer that is free from any therapeutic substances" as currently claimed. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. Applicant has not shown how to make and obtain a drug-free coating, particularly in view of the fact that the coating layer comprises "polymeric particles containing a therapeutic substance". Therefore, it cannot be seen as to how the coating layer would be "free from any therapeutic substances" since Applicants are claiming *polymeric particles containing a therapeutic substance*, which are embedded within the coating layer. Hence, the claims contain contradicting language in that they require drug and yet simultaneously desire to avoid drug in the coating layer.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 25 and 32 recite "polymeric particles containing a therapeutic substance, which are embedded within the coating layer, wherein the coating layer is free from any therapeutic substances". The claim language is indefinite because it is confusing and unclear as to how the coating layer can "be free from any therapeutic substances" when the claim explicitly recites

"polymeric particles containing a therapeutic substance". The language in the claims is contradictory claim language in that they require drug and yet simultaneously desire to avoid drug in the coating layer. How can there be a drug-free coating layer when the coating layer specifically requires drug/polymer particles in it? Clarification is requested.

Claim Rejections - 35 USC § 103

Claims 25, 28-31 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ding *et al.* (hereinafter "Ding") (U.S. Pat. No. 6,099,562) in view of Lentz *et al.* (hereinafter "Lentz") (US Pat. Appln. Pub. No. 2002/0133183) and further in view of Hunter *et al.* (hereinafter "Hunter") (U.S. Patent No. 5,886,026).

Ding ('562), as discussed above, teaches a medical device, coating and method for coating an implantable stent wherein a relatively thin layer of biostable elastomeric material in which biologically active material is dispersed as a coating is applied on the surfaces of the stent prosthesis (col. 3, line 60 – col. 4, line 7). The coating is preferably applied as a mixture, solution or suspension of polymeric material and finely divided biologically active species dispersed in an organic vehicle or a solution or partial solution of such species in a solvent or vehicle for the polymer and/or biologically active species (col. 4, lines 8-13). This reads on Applicant's medical device having a 'coating layer wherein the therapeutic substance completely encased within the polymer particles' and a 'film layer including polymeric material encasing the polymeric particles'. The term "finely divided" refers to any type or size of included material from dissolved molecules through suspensions, colloids and particulate mixtures. The active material is dispersed in a carrier material which may be the polymer, a solvent or both. The

coating is preferably applied as a plurality of relatively thin layers sequentially applied in relatively rapid sequence and is preferably applied with the stent in a radially expanded state (col. 4, lines 14-21). Ding discloses that the coating may be applied by dipping or spraying using evaporative solvent materials of relatively high vapor pressure (col. 4, line 66 – col. 5, line 9).

The layered coating is referred to as the undercoat and topcoat. Typically most or all of the biologically active material is contained in the undercoat and a non-thrombogenic or biocompatible non-porous surface found in the topcoat (col. 4, lines 22-30); (col. 6, lines 6-14). The topcoat can cover either the entire undercoat or only part of the undercoat before or after implantation (col. 6, lines 50-54). In this regard, Fig. 8 demonstrates use of a topcoat containing Fluorosilicone (FSi) *only* (i.e., no drug) as compared with a Fsi topcoat containing heparin (col. 8, lines 54-57). Thus, based upon this reading the topcoat layer is free from therapeutic substance(s). In addition, column 15, lines 25-30 indicates that the layers can be used which have *no drug loadings* at all. For example, a pulsatile heparin release system may be achieved by a coating in which alternate layers containing heparin are sandwiched between unloaded layers of silicone or other materials for a portion of the coating. Thus, various combinations can be obtained with respect to controlling the release of biologically active materials. Suitable active materials disclosed include agents that inhibit hyperplasia and particularly, restenosis (col. 7, lines 30-53).

Hence, Ding discloses a medical device (i.e., stent) and coating method comprising application of a suspension, colloids and particulate mixtures whereby polymer/drug has been dispersed in an organic phase or vehicle/carrier. Ding discloses that such a process enables an effective method of coating an implant, such as a stent whereby a relatively thin layer of or

multi-layer coating of biostable elastomeric material in which active material is dispersed can be achieved. The device comprises both an undercoat and topcoat, whereby the topcoat can be free of drug or therapeutic substances. The coating is applied onto the surfaces of the stent such as by spraying and the amount of active substance can be varied using this process.

Ding does not teach that their "coating layer comprises a polymer different from the polymer from which the particles are made".

Lentz ('183) teaches implantable medical devices, such as stents, provided with polymeric coatings (i.e., polyfluoro copolymers) and films to deliver pharmaceutically active material (page 8, ¶ 0084, Abstract), whereby particles of drug are fully encapsulated in the polymer (page 9, ¶ 0088) and wherein different polyfluoro copolymers may be used for different layers in the stent coating. The individual coatings may be prepared from different polyfluoro copolymers (page 8, ¶ 0084). Blends of polyfluoro copolymers may also be used. The use of different polymeric coatings provides a desired balance of coating properties, i.e., elasticity, toughness, etc. and drug delivery characteristics, such as release profile (page 8-9, ¶s 0086-0087). Lentz teaches that in cases where a dispersion is applied to the stent and the smoothness of the coating film surface requires improvement, or to be ensured that all particles of the drug are fully encapsulated in the polymer or in cases where the release rate of the drug is to be slowed, a clear topcoat used to provide sustained release of the drug or another polyfluoro copolymer that further restricts the diffusion of the drug out of the coating may be applied (page 9, ¶ 0088).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate different polymeric coatings onto an implantable medical device, such

as a stent, as taught by Lentz, within the devices of Ding. One would do so with a reasonable expectation of success because Lentz explicitly teaches implantable medical devices (i.e., stents) provided with polymeric coatings (i.e., polyfluoro copolymers) to deliver pharmaceutically active material, whereby particles of drug are fully encapsulated in the polymer and wherein different polyfluoro copolymers may be used for different layers in the stent coating. The use of different polymeric coatings provides a desired balance of coating properties, i.e., elasticity, toughness, etc. and drug delivery characteristics, such as release profile. The expected result would be an improved drug-loaded stent for the delivery of various active agents.

The teachings of Ding are discussed above. Ding does not teach particles of 0.5 to 2 microns in size (instant claim 29). It is the position of the Examiner that the determination of suitable or effective particle sizes can be carried out via routine or manipulative experimentation by the skilled artisan to obtain optimal results, as these are variable parameters attainable within the art. Nonetheless, the Hunter reference ('026) teaches particle sizes as presently claimed.

Hunter ('026) teaches compositions comprising anti-angiogenic factors and polymeric carriers, stents which have been coated with such compositions and methods for utilizing the stents and compositions (see column 1, lines 15-20); (col. 4, lines 25-45); (col. 37, line 31 – col. 38, line 4) and claims. The stents may be self-expanding, balloon expandable or implanted by a change in temperature (col. 23, lines 23-42). In preferred embodiments, the anti-angiogenic compositions are provided in non-capsular formulations such as microspheres (ranging from nanometers to micrometers in size), as well as pastes, films and sprays (col. 16, line 63 - col. 17, line 11). The sprays may be prepared from microspheres having a size of for example, from 0.1

μm to 3μm (this range falls within and meets Applicant's claimed range of 0.5 to 2 microns in size of instant claim 29) (col. 17, lines 30-65).

Hunter teaches that the stents may be coated with the anti-angiogenic compositions in various manners, including for example: (a) by directly affixing to the stent an anti-angiogenic composition (e.g., by either spraying the stent with a polymer/drug film or by dipping the stent into a polymer/drug solution); (b) by coating the stent with a substance such as a hydrogel which will in turn absorb the anti-angiogenic composition; (c) by interweaving anti-angiogenic factor coated thread (or the polymer itself formed into a thread) into the stent structure; (d) by inserting the stent into a sleeve or mesh which is comprised of or coated with an anti-angiogenic composition; or (e) constructing the stent itself with an anti-angiogenic composition (col. 22, line 8 – col. 23, line 10). Hunter teaches that for vascular stents, the composition should not render the stent thrombogenic (causing blood clots to form) or cause significant turbulence in blood flow (more than the stent itself would be expected to cause if it was uncoated) (see col. 23, lines 2-10).

The anti-angiogenic compositions may additionally comprise a wide variety of compounds in addition to the anti-angiogenic factor and polymeric carrier (col. 15, line 16 - col. 16, line 35). The manufacturing process of the microspheres and the manufacturing process of the stent coating is discussed at column 45, line 31 – column 48, line 59. Also see column 54, lines 24-51, whereby preparation of control microspheres (drug absent) are discussed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide for microspheres having a size of from 0.1 μm to 3μm (this range meeting Applicant's claimed range of 0.5 to 2 microns) as taught by Hunter, within the devices of Ding.

One would do so with a reasonable expectation of success because Hunter explicitly teaches implantable medical devices (i.e., stents) provided with microspheres having a size of from 0.1 μm to 3μm and suggests that these are suitable particle sizes that yield effective results. The expected result would be an improved drug-loaded stent for the delivery of active agents.

(10) Response to Argument

Appellants argue:

The rejection under 35 USC § 112, first paragraph is in error.

Claims 25 and 32

Appellants argue the subject matter of the instant claims are enabled and consequently comply with 35 USC § 112, first paragraph.

Appellants argue that the test of enablement is whether one with reasonable skill in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. Based on this, Appellant argues that the specification unequivocally describes how to make and use the invention without undue experimentation so as to satisfy 35 USC 112, first paragraph. Figure 2 illustrates a medical substrate wherein the coating layer is free from any drugs and holds the polymeric particles containing therapeutic to the medical device. Examples 1-8 and Methods 1-6 illustrate methods of making the particles, which include the drug, as well as how to produce the coating. From this it should be clear that "free from any therapeutic substance" refers to the coating itself, which is formed from a solution without any dissolved therapeutic substances, since the therapeutics are suspended.

This is not persuasive because even though the polymeric particle encasing the therapeutic agent is suspended within the coating, as opposed to dissolved in the coating, the coating layer still contains a therapeutic substance. A suspension is defined as a mixture in which small particles of a substance are dispersed throughout a liquid. This differs from a solution where a particle would dissolve in a solvent and no longer maintain the particulate form. Particles suspended in a coating are still incorporated in the coating layer. The coating layer may be free from "any other" therapeutic or could comprise a matrix free from therapeutic agents. However, claims 25 and 32 as written, are not enabled because a coating cannot suspend therapeutic agents while being free from therapeutic agents.

Accordingly, the 35 USC 112, first paragraph rejection is maintained.

Appellants argue:

The rejection under 35 USC § 112, second paragraph is in error.

Claims 25 and 32

Appellants argue the subject matter of the instant claims are definite and consequently comply with 35 USC § 112, second paragraph.

Appellants argue that it is grossly unfair and unreasonable to the Applicants, both in lost time and expenses, to have to endure 7 office actions without any hint that the subject matter of the claims have for all this time been "confusing and unclear" to the Examiner. Figure 2 illustrates a medical substrate wherein the coating layer is free from any drugs and holds the polymeric particles containing therapeutic to the medical device. Examples 1-8 and Methods 1-6 illustrate methods of making the particles which include the drug as well as how to produce the coating. From this it should be clear that "free from any therapeutic substance" refers to the

coating itself, which is formed from a solution without any dissolved therapeutic substances, since the therapeutics are suspended. The cited portions of the specification provide the light necessary so that the metes and bounds of the invention can be clearly understood without self-contradiction.

This is not persuasive because even though the polymeric particle encasing the therapeutic agent is suspended within the coating, as opposed to dissolved in the coating, the coating layer still contains a therapeutic substance. A suspension is defined as a mixture in which small particles of a substance are dispersed throughout a liquid. This differs from a solution where a particle would dissolve in a solvent and no longer maintain the particulate form. Particles suspended in a coating are still incorporated in the coating layer. The coating layer may be free from "any other" therapeutic or could comprise a matrix free from therapeutic agents. However, claims 25 and 32 as written, are unclear as a coating cannot suspend therapeutic agents while being free from therapeutic agents.

Accordingly, the 35 USC 112, second paragraph rejection is maintained.

Should the Board affirm the rejections under 35 USC 112, both rejections could be obviated very simply by changing the wording of the coating layer, as explained in the following section.

It is clear that appellants consider the coating layer to be the polymeric material surrounding the particles containing the therapeutic substance. However, the claims are not clear on this point. First, claim 25 defines the coating layer and then says, "polymeric particles containing a therapeutic substance embedded **within the coating layer**," (emphasis added) followed a few lines later by, "wherein the coating layer is free from any therapeutic

substances." If the second occurrence of the coating layer were described as the coating matrix, or some other equivalent term, it would be clear that the therapeutic substance is solely within the particle and not in the matrix of the polymer surrounding the particles.

Appellants argue:

The rejection under 35 USC §102(e) over Ding is in error.

Claim 32

Appellants argue that when Ding teaches "the coating is preferably applied as a mixture, solution, or suspension of polymeric materials and finely divided biologically active species dispersed in an organic vehicle or a solution or partial solution of such species in a solvent or vehicle for the polymer and/or biologically active species (col. 4, lines 8-13)", it does not teach a polymer in particle form encasing the active species or the drug. First, the polymer, once deposited and the solvent removed, is referred to as a "layer" throughout the specification and not particles (which encase the active species). Not once is the term "particle" used in reference to the deposited polymer. Second, a homogenous layer and not particles is clearly depicted by Figure 9-reference number 103. Third, the specification refers to the mixture as a "homogenous composition" (see col. 9, line 5, col. 9, lines 27-31, and Figure 1, block 14). Nowhere in Ding is there any mention of "polymeric particles" and further "the therapeutic substance being completely encased within the polymeric particles." Also, the Office Action recited a different layer of Ding as corresponding to the "coating layer free from any therapeutic substances". The claim requires that the layer that is itself "free from any therapeutic substances" is the same layer that includes, embedded therein, the polymer particles that completely encase the therapeutic substance.

Applicant's arguments with respect to claim 32 have been considered but are moot in view of the new ground(s) of rejection.

Appellants argue:

Claim 34

Claim 34 has been rejected as being anticipated by Ding. Claim 34 depends from independent claim 25 which has not been rejected by Ding.

Applicant's argument with respect to claim 34 has been considered but is moot in view of the new ground(s) of rejection. Claim 34 was mistakenly rejected with claim 25 as opposed to being rejected under Ding and Lentz with claim 32. Appropriate correction has been made.

Appellants argue:

Claim 36

Appellant argues that Ding does not disclose the features "adding polymeric particles containing a therapeutic substance to a fluid form of an implantable medical device coating material." Ding also does not disclose the features of "wherein the coating material includes a polymeric material dissolved in a solvent, and wherein the polymeric particles containing the therapeutic substance are suspended in the polymeric material dissolved in the solvent." Ding makes reference to a suspension but does not disclose a polymeric material dissolved in a solvent, wherein the polymeric particles are suspended in the polymeric material.

Applicant's arguments with respect to claim 36 have been considered but are moot in view of the new ground(s) of rejection.

Appellants argue:

Claim 37

Appellants argue that claim 37 depends from 36 and should be reversed for the same reasons as 36. Also, there is no discussion in Ding of any polymeric material encasing polymeric particles.

Applicant's arguments with respect to claim 37 have been considered but are moot in view of the new ground(s) of rejection.

Appellants argue:

The rejection under 35 USC§103(a) over Ding, Lentz, and Hunter is in error.

Claims 25, 28-31, and 35 are non-obvious with respect to Patent No. 6,099,562 of Ding, in view of U.S. Patent Application Publication No. 2002/0133183 of Lentz, and further in view of Patent No. 5,886,026 of Hunter.

Appellants argue that claim 25 recites "polymeric particles containing a therapeutic substance embedded within the coating layer" and "wherein the coating layer is free from any therapeutic substances." As discussed above with respect to claim 32, Ding does not disclose these features. Lentz and Hunter cannot remedy these deficiencies of Ding because they were not cited with respect to such features. Also, claim 25 recited "wherein the coating layer comprises a polymer different than the polymer from which the particles are made." The Office Action cited Lentz with respect to this feature which Ding failed to disclose. However, Lentz discloses that different polyfluoro copolymers may be used for different layers in the stent coating. This refers to *different* layers not to particles embedded within a layer. The teachings of Hunter were not applied to claim 25.

This was not found persuasive because although Ding does not discuss polymeric particles, Lentz teaches this feature as polymers encasing a therapeutic particle. See page 9,

paragraph [0088]. A therapeutic particle completely encapsulated by a polymer would in turn result in a polymeric particle. With regards to the coating layer comprising a polymer different than the polymer from which the particles are made, Lentz teaches a coating formulated by mixing one or more therapeutic agents with polyfluoro copolymers, as well as other agents. Other agents include hydrophilic or hydrophobic polymers which can modify the release profile. These polymers are added to the coating mixture, however only the polyfluoro copolymer encapsulates the drug. See page 9, paragraphs [0087-0088]. Therefore, not only are therapeutic particles encapsulated by a polyfluoro polymer to create polymeric particles, but these polymeric particles are mixed in with other polymers and additives to form a coating layer on an expandable stent. Further evidence of the addition of a second polymer comes from page 9, paragraph [0090], which states "The product may contain blends of the same or different polyfluoro copolymers having different molecular weights to provide the desired release profile or consistency to a given formulation." This shows that different polymers are in the actual coating. However, page 9, paragraph [0088] states, "that all particles of the drug are fully encapsulated in **the** polymer" which means that regardless of other components in the coating composition, the only component encapsulating the particles is one polymer. Therefore, the other polymers present are additives of the coating that affect the release profile. Tertiary evidence that different polymers are present in the coating composition that differ from that which encapsulates the therapeutic is stated on page 9, paragraph [0093]. Lentz has already noted that multiple layers of coating can be applied to the stent, wherein the layers contain different polymers. Lentz further teaches that the coatings and films may be cross-linked once applied to the medical devices. Therefore, if these different layers are cross-linked together, the

total coating of the stent would become one continuous matrix. If the layers contain different polymers, then the continuous matrix would contain polymers different from the polyfluoro copolymer that encapsulates the drug. Therefore, Ding and Lentz teach polymeric particles containing a therapeutic substance embedded within a coating layer comprising a polymer different from that which the particles are made.

Accordingly, the rejection over Ding in view of Lentz is maintained.

Appellants argue:

Claim 28

Appellants argue that claim 28 depends from and further limits claim 25. The rejection of claim 28 should be reversed for the same reasons as claim 25. Also, claim 28 recites "wherein the polymeric particles are made from a hydrogel material." The only mention in Ding of hydrogel was in the related art section. Hunter states that a stent can be coated with a hydrogel, which will in turn absorb the anti-angiogenic composition. The Office Action does not make clear what part of the prior art is relied upon as allegedly teaching "wherein the polymeric particles are made from a hydrogel material." Thus, no *prima facie* rejection of claim 28 has been made.

This was not found persuasive for the reasons applied to claim 25 above. Also, Hunter teaches coating the stent with a substance such as a hydrogel which absorbs the anti-angiogenic composition. This is further described in the field of the invention stating "the present invention relates to stent coating compositions comprising anti-angiogenic factors and polymeric carriers." See column 1, lines 15-20. Therefore, if the carrier of the therapeutic is polymeric and the part of the coating that absorbs the anti-angiogenic component is hydrogel, then the polymeric carrier

is a hydrogel. Using what is known from Ding and Lentz, as well as Hunter, it would have been obvious to one of ordinary skill in the art at the time the invention was made to encapsulate a therapeutic particle with a polymeric hydrogel because polymeric hydrogel carriers of anti-angiogenic drugs are known, and by encapsulating a particle, the polymeric hydrogel would in turn be in particulate form.

Accordingly, the rejection over Ding in view of Lentz, and further in view of Hunter is maintained.

Appellants argue:

Claim 29

Appellants argue that claim 29 depends from and further limits claim 25. The rejection of claim 29 should be reversed for the same reasons as claim 25.

This was not found persuasive for the same reasons as those applied to claim 25.

Accordingly, the rejection over Ding in view of Lentz, and further in view of Hunter is maintained.

Appellants argue:

Claim 30

Appellants argue that claim 30 depends from and further limits claim 25. The rejection of claim 30 should be reversed for the same reasons as claim 25.

This was not found persuasive for the same reasons as those applied to claim 25.

Accordingly, the rejection over Ding in view of Lentz, and further in view of Hunter is maintained.

Appellants argue:

Claim 31

Appellants argue that claim 31 depends from and further limits claim 25. The rejection of claim 31 should be reversed for the same reasons as claim 25.

This was not found persuasive for the same reasons as those applied to claim 25.

Accordingly, the rejection over Ding in view of Lentz, and further in view of Hunter is maintained.

Appellants argue:

Claim 35

Appellants argue that claim 35 depends from and further limits claim 32, which has not been rejected under Ding, Lentz, and Hunter. This rejection is improper. Even if it was somehow proper, claim 35 recites "wherein the coating layer comprises a polymer different than the polymer from which the particles are made." As explained above with respect to claim 25, Ding, Lentz, and Hunter fail to disclose or suggest this feature.

The rejection of claim 35 in view of Ding, Lentz, and Hunter was in error and is now covered under the rejection of claim 32 of Ding in view of Lentz. This was not found persuasive because although Ding does not discuss polymeric particles, Lentz teaches this feature as polymers encasing a therapeutic particle. See page 9, paragraph [0088]. A therapeutic particle completely encapsulated by a polymer would in turn create a polymeric particle. With regards to the coating layer comprising a polymer different than the polymer from which the particles are made, Lentz teaches a coating formulated by mixing one or more therapeutic agents with polyfluoro copolymers, as well as other agents. Other agents include hydrophilic or hydrophobic polymers which can modify the release profile. These polymers are added to the coating

mixture, however only the polyfluoro copolymer encapsulates the drug. See page 9, paragraphs [0087-0088]. Therefore, not only are therapeutic particles encapsulated by a polyfluoro polymer to create polymeric particles, but these polymeric particles are mixed in with other polymers and additives to form a coating layer on an expandable stent. Further evidence of the addition of a second polymer comes from page 9, paragraph [0090], which states "The product may contain blends of the same or different polyfluoro copolymers having different molecular weights to provide the desired release profile or consistency to a given formulation." This shows that different polymers are in the actual coating. However, page 9, paragraph [0088] states, "that all particles of the drug are fully encapsulated in **the** polymer" which means that regardless of other components in the coating composition, the only component encapsulating the particles is one polymer. Therefore, the other polymers present are additives of the coating that affect the release profile. Tertiary evidence that different polymers are present in the coating composition that differ from that which encapsulates the therapeutic is stated on page 9, paragraph [0093]. Lentz has already noted that multiple layers of coating can be applied to the stent, wherein the layers contain different polymers. Lentz further teaches that the coatings and films may be cross-linked once applied to the medical devices. Therefore, if these different layers are cross-linked together, the total coating of the stent would become one continuous matrix. If the layers contain different polymers, then the continuous matrix would contain polymer that differ from that which encapsulates the drug. Therefore, Ding and Lentz teach polymeric particles containing a therapeutic substance embedded within a coating layer comprising a polymer different from that which the particles are made.

Accordingly, the rejection over Ding in view of Lentz, and further in view of Hunter is maintained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section (**9**) above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) **Reopen prosecution.** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

(2) **Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any

amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully submitted,

/JESSICA WORSHAM/

Examiner, Art Unit 1615

A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:

/Remy Yucel/

Director, Technology Center 1600

Conferees:

/Robert A. Wax/
Supervisory Patent Examiner, Art Unit 1615

/Frederick Krass/
Supervisory Patent Examiner, Art Unit 1612